Using the Diffusion of Innovation Model in Reducing Health Disparities in High Cervical Cancer Mortality Regions Transcript

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DR. ROGERS: Can everyone hear me Am I loud enough No problem. Alright. Good. Yes, I'm an old fashioned kind of guy. I wear penny loafers and Brooks Brothers clothes, usually. And this is as close as I get to power point. I print them out and then bring them up projected. EVERETT ROGERS: Can everyone hear me Am I loud Enough No problem All right. Good. Yes, I'm an old-fashioned Kind of guy. I wear penny loafers and Brooks Brothers clothes, usually. And this is as close, I guess, as I get to PowerPoint. I've (unintelligible) out on a regular projector. As Jon said, I want to talk with you about how the diffusion of innovations model might be applied to this problem with which we've been wrestling today. So briefly, I'm going to give you some of the more useful aspects to us of the diffusion model and then take a few steps towards their possible application, in hopes that this will be a stimulus for the action plans of tomorrow. (overhead) There's always a moment early in the show to promote the product.

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And that's the fourth edition, the 1995 edition, it's soon going to be replaced in 2003 by the fifth, and the final, edition of the Diffusion of Innovations. The reason I put this up, mainly, is to show the metaphor of a drop of water in a still pool spreading out, perhaps suggesting the spontaneous nature of diffusion, and many diffusion events are spontaneous. They're unmanaged, unplanned, sometimes they're surprising. That doesn't mean, of course, that our knowledge of this process, if we have such knowledge, couldn't be used to make an idea spread in a way that we want it to, which is often more rapidly than it has been, otherwise, spontaneously spreading. Sometimes the opposite.

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Here's my definition of an innovation: An idea that is perceived as new. And "perceived" is a very important word. We realize that today and in preparation for today, we have been very concerned with how we see this problem with our conceptualization of it. And with solutions to it. But those really don't matter. That's all futile. What really matters is how the people whose behavior we're trying to change perceive Pap smears, for instance. And they may perceive them quite different than we do. Now this exercise has not been as futile as I have made it seem, because, of course, many of us, many of you, have a great deal of detailed knowledge of how our populations that we're trying to reach perceive Pap smears, for instance, and other means of cervical cancer detection and control. So we're getting as close as we can without doing a study of those perceptions of the innovations that we're centrally concerned about. But we should never forget that it is their perceptions of our innovations that ultimately matter in trying to change behavior. It's not our perceptions; it's their perceptions. I'll emphasize that again. Now, on the face of it, one might think that we're in sort of surprisingly good shape in diffusing the idea of Pap smears. We know from our detailed review of literature and the studies that that review is based on that a rather high percent of women over 18 in the United States regularly do have Pap smears. Something in the neighborhood, depending on what study you look at, in the realm of 80 . Well, that's overwhelmingly good news. There is a slight difference, but important difference, between the innovation of a Pap smear and having a regular Pap smear. And we see that also in the review of literature that all of us, I think, have a summary of, and some of us have the whole review. Am I right about that Yes. Okay.

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In any event, one of the diagrams that always comes to mind when somebody says the word diffusion is this S-shaped curve. And if you're not familiar with it, it's just a growth curve,

and it rather accurately describes the cumulative nature of the number of adoptions of a new idea. This is to say a new idea typically begins very slowly, takes a great deal of promotional effort to get it started. But once there are some substantial number of users of the innovation, then its further diffusion usually occurs very rapidly and without a great deal of further promotional effort. And if we plotted the percent of use or adoption of regular Pap smears over time, they would presumably have formed some shape roughly like this one: one that starts slow, then takes off, increases very rapidly, and then slows down again. So for the general idea of Pap smears, we're out in here someplace. And we've come to call this point of change in the S-shape curve the critical mass. The point in which there are enough -- a sufficient body of satisfied adopters of the innovation that they take charge of its further diffusion. That's the power of diffusion. That's the power of understanding how the diffusion process works. Once we get to a certain point, to make an extreme statement, we can give up further health promotion if it's a health idea, and it will diffuse itself. You're already thinking, of course, that this S- shaped curve is also a curve for an epidemic. And the critical mass works there too. The standard strategy for combating an epidemic of any kind is to throw everything we have at it as soon as we can. We didn't do that with the spread of HIV, and we and many countries in the world are today paying for that negligence for those four years that we delayed before we made it a priority. Anyway, that's the general idea of the critical mass.

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And it's interesting to think about what we've been talking about today in light of the S-curve. The main thing it tells us is this is not a linear process. Here's the S curve, the cumulative S-shaped curve, with part of an explanation, the explanation of why it is S-shaped. Why it takes off. Why there is a critical mass. And part of the explanation is that when the opinion leaders adopt -- you may use other words for opinion leaders -- it's a general word that I use and most of these, now 5,000 plus, studies of the diffusion of innovations of various kinds of new ideas have used. Opinion leaders, just meaning people who are respected for their opinions -- members of our target audience, the population we're interested in. And once they adopt -- and they do not adopt at first - they wait and then, at a certain time, they adopt, and that's when the critical mass typically takes place. Of course, as you can imagine, there are clinical trials of opinion leadership strategies. Now, I have about 30 or 35 of them and they wait to be meta- analyzed, which they will be in the fifth and final edition. And the almost universal finding is that when opinion leaders are identified and used correctly as an intervention technique, the rate of diffusion speeds up -- usually by something in the magnitude of five to ten to twelve percent, depending on how well the opinion leadership strategy is carried out. And that seems to work for a wide variety of health promotion innovations. It seems to work in hospitals with medical doctors, so there are a wide variety of uses of the opinion leadership strategy. There is a very large federally funded project underway in the world, in six countries. It's one of the largest health interventions under way today, using the opinion leadership strategy to combat HIV. The six countries are the six countries that, you might imagine, in which the epidemic is running rampant. So we'll see if that NIMH funded project -- I'm a consultant to it -- will indeed, under these very cultural conditions, bring about a more effective control of that epidemic.

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Here is a little socio-gram. This is a blast from the past for me, Jon. I had forgotten that I ever did this study. When you get to be that forgetful, I guess you need to keep on doing studies. These are some data from -- it's an artist's rendition, of course, of them -- from my Ph.D. dissertation, which was, of course, as you might imagine, a study of the diffusion of an agricultural innovation. It was, indeed, a chemical weed spray, 2,4D weed spray, that was at the time I did this study in a small farm community in Iowa -- Collins, Iowa. I think it was about 12 miles from Ames, Iowa, where I was earning my Ph.D. Iowa State University at that time was the center for diffusion research. It was the center. It was all there was --

nobody else was doing diffusion research at that time. Anyway, that's why Collins, Iowa, wound up here. It's a nice little microcosm. It's 14 farmers, and you may not be able to see these numbers from where you sit -- you probably can't -- but this was the first farmer to adopt 2,4D weed spray. He was an adopter in 1948. I gathered these data in 1954, '55. He had learned about this innovation by traveling widely, as many innovators do -- innovators in every field. He was a wealthy farmer. He drove a Cadillac convertible, which was very unusual for an Iowa farmer, and it was pink, and he wore Bermuda shorts while he did farmwork. As you can see, he was not an opinion leader in this community. It was said that he also drank heavily, and that probably was the case. In any event, he went directly to an agricultural scientist, learned about 2,4D weed spray, and rather immediately, put it into use on his farm. Neighbors were laughing at him -- well they laughed at him all the time -- but they now laughed at him thinking that he could kill weeds with a chemical. And then the opinion leader, I remember this farmer very well. I remember his name yet today. It was Granger Buck. So this is Mr. Granger Buck, who was more or less a neighbor. These are square miles; Iowa's laid out in square mile land. So, their farm's neighbor, they were quite unalike people. Granger Buck was younger and less well to do and drove a Chevrolet pick-up truck and I don't think touched a bottle of beer, even. Very highly respected, and indeed, you'll find, counting him -- I think there were eight other of the 14 farmers. Well, of the other 12 farmers. Eight of them told me that they learned about the weed spray and were convinced to use it from Granger Buck. They didn't all adopt in the same year. Granger Buck adopted it in 1950, two years after the innovator. And, so here's a farmer who adopted in '51,'53, '53, '52. But once Granger Buck adopted, you can see many other farmers in this little neighborhood adopted also. His influence did not stop with his immediate neighborhood. It went out into the rest of the community. There were 155 farmers in this larger community, and many of them were influenced directly or indirectly by Granger Buck. Well, there's an opinion leader, and it was one of the first ones that I ran into, and, of course, it got me interested in opinion leaders, and I've been studying them and their role in the diffusion process ever since.

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Here's that S-shaped curve that we looked at earlier, but with dollars placed on it. These might be any kind of resources. They might be dollars; they might be time devoted to working with people on the part of staff. Whatever kind of resources, but I just used dollar signs, and as I've implied earlier, very early in the diffusion process, it takes a heavy investment to get very many more adopters. And this time, the innovation is not part of the community's norms. And indeed, it isn't worth a large investment back in this stage because you are not going to get a high return in getting more adopters. And often, we can become very discouraged out in this time period if we don't remember that the diffusion process isn't a linear process. It may look linear out here, but it's going to curve. And, of course, this is the time at which opinion leaders are adopting, and that's the time to invest one's resources heavily in diffusion. But then, after a certain threshold point, then one just maintains a program and begins to look for the next innovation or the next health promotion idea that could improve people's health. So there is sort of attempt to make a practical application. Just to use a specific example, this is one from a few years ago. My colleague, Vish and I were involved in sort of two prongs. Two brother projects or two sister projects. Yours was in Minnesota, mine was in Northern California back in the '70s. Was that the '70s The '70s and '80s. Yes, it was. Late '70s, early '80s for me. In any event, this was a heart disease-- we were both involved in heart disease prevention programs, federally funded, and we were involved in planning the intervention and carrying it out and also in evaluating the effects. Well, the example I'm going to use is actually an overseas example, from North Karelia, the North Karelia Project in Finland. It happened that Finland had the highest rate of heart disease in the world at that time. At the time that project began; it was 1971. And North Karelia was the county or the province in Finland that had the highest rate of heart disease in Finland. So, these people were suffering from this illness and they knew it. They went to the National Parliament of Finland in Helsinki and

demanded a program, a preventive health program, and I was a sometime consultant in carrying it out. Mostly I was interested in how they did things better than we did on the Stanford Health Heart Disease Program and what we could learn from them. But in any event, I was involved in North Karelia with a very large scale intervention, testing the power of opinion leaders. And in North Karelia, we selected 800 -- with the help of local people, identified 800 opinion leaders, trained them, and then they carried the brunt of the promotional activity for the heart disease prevention program. So that was an early health application of the idea of using opinion leaders.

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One of the important dimensions of the diffusion model are the perceived attributes of an innovation. One way to make some rough predictions about how rapidly an innovation will diffuse is on the basis of how it's perceived. Most people perceive most innovations in which they're interested along the lines of these five or six dimensions. And there's a whole chapter in my book about me summarizing the research evidence on each of these. But, very quickly, one of the things to think about whenever someone is inviting you to help diffuse an innovation is to think about whether it's perceived as being relatively advantageous or not. That is, what is its degree of superiority in accomplishing whatever goals it accomplishes over what it's replacing. And every new idea, ultimately, in people's minds, replaces an old idea. Well, what's the relative advantage of Pap smears They're not quite 100 relatively advantageous. We know from the extensive review of literature that about 25 or 30 percent of Pap smears are false negatives. That is not good news from the viewpoint of diffusing this idea further in these special populations that we're interested in. We see from the review of literature some further bad news about the follow-up to abnormal Pap smears. Twenty to 75 percent of the cases report no appropriate follow-up. This is very bad news from the idea of diffusing Pap smears to the people who need them. We read in the review of literature about delays of up to three months before the provider contacts the woman who has an abnormal Pap smear. Picking out, of course, extremely bad news in our review of literature, but it suggests that we could do some things to improve the quality of that innovation that would, indeed, greatly, in my opinion, predict -- it would greatly increase it's diffusion. Fundamental to that is to find out how our intended audiences perceive the innovation of Pap smears. Do they perceive them as having inaccurate results Do they perceive them as a n act that may or may not lead to early detection Those are the questions that we need to have answered. Compatibility is the degree to which the new idea fits with the way we think. With what we value and so on. We know that there are cultural factors -- we know this from the literature that's reviewed -- that explain, in part, why some areas and some people in some areas in the U.S. have much lower rates of adoption of Pap smears than others. One explanation, at least, is sociocultural factors. And we know that modesty, for instance, is an important factor in whether women feel it is appropriate to seek Pap smear screening. I'm not going to take the time to go down the rest of these, but I hope I've gotten you thinking about how to try to put yourself in the skin of the person whose behavior you're trying to change and to see the innovation in a way that they see it.

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Of course, we're talking about preventive behavior, and one of the things that's especially intriguing to me in the health field, in public health, is the fact that often our innovations are preventive innovations. They are innovations that one has to take an act now, and it might be an unpleasant act, and it might be an expensive act, but we have to go to some trouble now to adopt an innovation that may or may not prevent some future occurrence that's unwanted. And generally, innovations that are preventive in nature are slow to diffuse. The results, the relative advantage of those innovations, is not obvious to people. If, indeed, this is the way to look at this innovation, it isn't hopeless. There are many things that we can do to make a preventive innovation diffuse more rapidly. But I believe that is

an important understanding here.

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I want to now stop with one final slide. I'm just a warm-up for Vish tonight. So this is the last little piece of warm-up. A very important thing we've learned about diffusion is to pay attention to the social system in which the innovation is spreading. Such matters as community norms become very important. Often, efforts to speed up the diffusion process take place in a community. And ultimately, most behavior change happens at the community level. That's not to say that national will to do something about a social problem is not important. It's very important. This is not to say that resources from a national level or a state level are not important, but we should never forget that most efforts to do something about a health problem ultimately take place in a community. Well, what are some of the community strategies that we might think about here. Ultimately, the reason that communities are so important is this is where people talk to people, and it's people talking to people, ultimately, diffusion tells us, that brings about change. Well, this is where we're going to ultimately mount our campaigns to change people's perceptions. Ultimately, to change their behavior if we can. This is the place at which, in communities, I mean, at which partnerships might be formed. NCI has been involved in several partnerships. One of them, recently, in my state, New Mexico. The Assist Program for Tobacco Control, where NCI, I think, partnered in that case with the American Cancer Society. We know, from our review of literature, about partnerships, projects, programs carried out through churches. Churches being important because they're a means to reach people who are not otherwise reached, in regard to cervical cancer. Well, that's my final thought then. It's just that we should think about the community level, ultimately, in efforts to diffuse these important innovations. Thank you very much.